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JAPANESE MEDICAL MATERIAL

NERION

(Injection of Nerium odorum Soland)

297178

Report No. 246

19 July 1946

MEDICAL ANALYSIS SECTION
5250th Technical Intelligence Company
APO 500

19 July 1946

NERION

(Injection of Nerium-odorum Soland)

SOURCE: Tokyo, Japan.

IMPORTANCE: Not previously reported. A cardiac stimulant and diuretic comparable to digitalis but without its cumulative properties. No identical product from this plant source (Nerium odorum Soland) is listed in available standard American references.

DESCRIPTION: One cubic centimeter of a clear yellowish liquid is enclosed in a colorless glass ampul, packaged ten per cardboard box.

SUMMARY OF GENERAL INFORMATION: Nerion is a preparation of the glucosides extracted from Nerium odorum Soland, a member of the Apocynaceae indigenous to Japan. The active ingredients are extracted from either the leaves or bark of the plant, standardized by Kan's method, and packaged in the following forms:

Nerion powder -- 2400 units per 1 gm.

Nerion liquid -- 1200 units per 1 cc.

Nerion injection -- 600 units per 1 cc.

Nerion pellets --

Nerion is a cardiac stimulant and diuretic which is rapid in action, non-cumulative, and more diuretic than digitalis. Toyokichi Takase, author of "Chemical Constitution and Physiological Action", p. 1307, states the following:

"Sakai discovered the glucosides Neriocorin and Neriocorein from Nerium Odorum Soland, a product of Japan. These glucosides are similar to Digitalis glucosides chemically and pharmacologically. Its representative glucoside, Oleandrin, becomes Gitoxigenin and Digitalose when dissolved in water. Neriocorin is similar to Oleandrin, and Neriocorein is similar to Neriin and they all have a heart stimulating action.

0.25 mg. of Oleandrin contracts and stops the heart in frogs. Neranthin is similar to Digitalin, and Neriin to Digitalein."

A translation of the literature enclosed with this product is part of this report and includes its description, action, experiments with animals, indications, directions for use, caution, packaging, references and manufacturer. Additional information furnished by the manufacturer on the patented method of manufacture has also been translated and embodied in this report.

PHOTOGRAPHS:

Figure 1 - Closed package of Nerion

Figure 2 - Open package of Nerion

Figure 3 - Nerion literature

Figure 4 - Additional literature

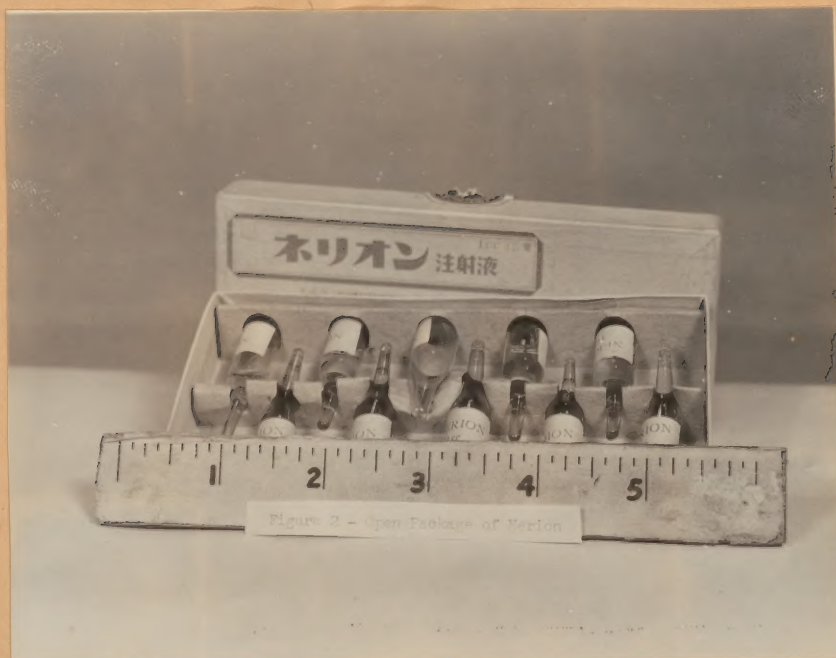
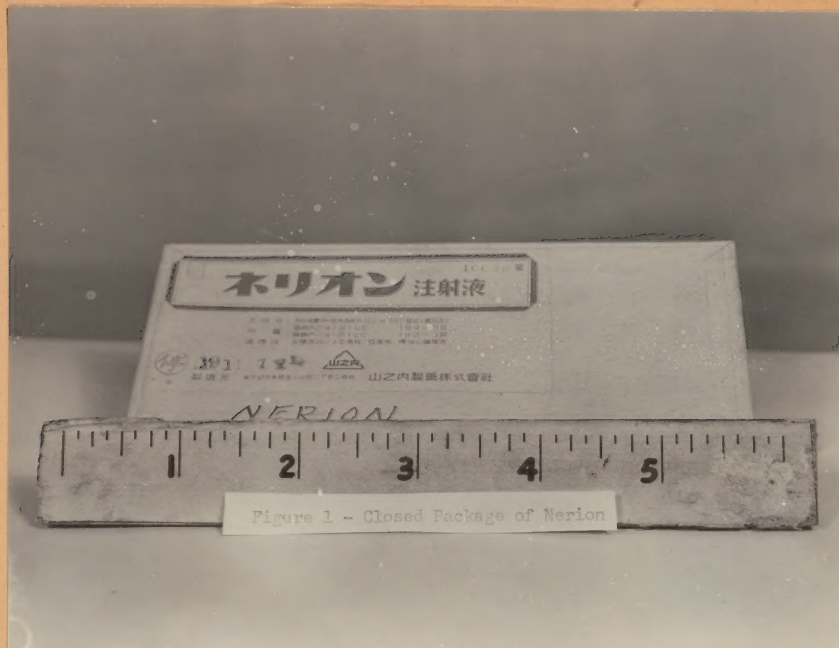
Figure 5 - Additional literature

Figure 6 - Additional literature

Figure 7 - Additional literature

Figure 8 - Additional literature

Figure 9 - Additional literature



強心利尿劑

ネリオン

NERION

夾竹桃科植物がヂギタリス葉類似の強心作用を有することは、従來の化學的研究に依り既に説明せられたる處なるも、未だ研究の領域を脱し得ざりき。茲にネリオンは本邦產夾竹桃葉中よりその含有有効成分を完全に抽出し嚴密なる藥理學的検査の上慎重に效力を測定し擬造せる強心利尿藥なり。

【性 狀】

本品は邦產夾竹桃科 Apocynaceae に屬する夾竹桃 *Nerium odoratum, Soland.* 葉の含有有効成分を含有し、嚴密なる藥理學的検査を行ひ、效力を次の如く定めたるものなり。

ネリオン末 買氏法にて 二四〇〇單位(一瓦)

ネリオン液 " 一二〇〇單位(一〇)

ネリオン注射液 " 六〇〇單位(一〇)

ネリオン末は苦味を有する微細なる淡黃色粉末にして、ネリオン液及び注射液は微紅色を呈する透明液なり。粉末は乾燥せる冷暗所に貯へば、長期間に亘りても效力減退せず。

【藥理作用】

- (一) 本品は心臟興奮作用を有し、作用狀態はヂギタリスと同一なり。
- (二) 血管系に對しては、緊縮上昇作用を呈するが、血壓を正常以上に強く上昇せしめず。
- (三) 強心作用は迅速且持続的にして、蓄積作用はヂギタリスに比し微弱なり。

【實驗的所見抄】

- (一) ネリオン内服液の一〇〇〇倍稀液は蛙心臟に對し強度の心運動亢進を起す。
- (二) 生體家兎心臟には、ネリオン注射液は〇・二〇(體重一匹に對し)にて、興奮作用を呈し、血壓は輕度の上昇する。〇・四〇(體重一匹に對し)にては作用は更に増強す。
- (三) マウスに於ける效力はヂギタリス葉 *Digitalis purpurea, L.* に匹敵し、ラナタ葉 *Digitalis lanata, Ehrhard.* に比して著しく高し。

【特 徴】

本品はヂギタリス葉製劑、ストロファンツス子製劑に比し左記の諸點に於て優れたる特長を有す。

- (一) 本品は強心作用確實にして、藥理學的にその效力を嚴密に測定したるを以て作用は恒に不變且化學的安定なり。
- (二) 心臟に選擇的に作用し、他の臟器組織に障

碍を與へず。

- (三) 蓄積作用はヂギタリス葉より微弱にして、強心作用はより強大且迅速なる故、ヂギタリス葉製劑にて效果のなき心臟障礙に對して良效果を收め得。
- (四) 本品はヂギタリス葉に勝る利尿脫水作用を有す。
- (五) 本品は用法簡便にして危險なく、效果はヂギタリス葉製劑より遙かに優劣なり。且、内服後是不快なる副作用を起すことなく、注射液も疼痛、硬結、組織壞死等を起すことなし

【適 應 症】

各種原因に依る急性、亜急性、慢性心臟衰弱、代償機能障礙時、心臟肺病、心内膜炎、心筋炎、不整脈、心臓性喘息、浮腫、ネフローズ、水腫、心筋炎、妊娠腎、クループ性肺炎、その他強心利尿劑を必要とする總ての症狀並に救急の治癒に適す。特に手術時の心臟衰弱の豫防並に治療に本品を靜脈内に注射すれば心臟衰弱を除去し得。

【用法・用量】

ネリオン末…一回〇・五瓦、一日二—三回、五—七日間投與す。更に持續投與する時には一日〇・五瓦とす。

ネリオン錠…一回二錠、一日三—五錠、五—七日投與す。更に持續投與するときは一日二錠とす。

ネリオン液…一回一〇、一日二—三回、五—七日間投與す。更に持續投與する時には一日〇・一〇とす。

ネリオン注射液…一回一〇、筋肉内には一日四—五回、靜脈内には一日二—三回注射す。

小兒用量はすべて一般用量決定方式に依る。本品の注射液と内服液との併用はその作用の發現までは差支へ無し。

注意…粉末は注意して或可く乾燥せる冷暗所に貯ふべし。

【包 裝】

ネリオン末…	五瓦	一〇瓦	二五瓦	四〇瓦
ネリオン液…	五〇	五〇	一〇〇	四〇〇
ネリオン注射液…	一〇	五管	一〇管	五〇管
ネリオン錠(一錠中〇・五瓦) …	五錠	一〇錠	一〇〇錠	四〇〇錠

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 東京店…東京市三區東區北大街一三四番地
 神戶店…神戶市三區東區中區一七五番地
 香港店…香港市中國區德輔道中五號
 臺北店…臺北市明石町二丁目一零番地

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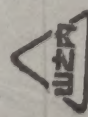
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参考文献

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- (二) 日本藥學雜誌第三五卷(第一五回 日本藥理學會臨時) 一三頁(昭和十六年)
- (三) 日本藥學雜誌第三五卷(第一六回 日本藥理學會臨時) 一三頁(昭和十七年)



特許明細書

特許第1712号

一、發明ノ名稱

「夾竹桃ヨリ強心利尿作用ヲ有スル配糖体混合物ヲ製造スル方法

一、發明ノ詳細ナル説明

從來本邦産夾竹桃 (*Nerium Odorum* Willd.) ノ葉又ハ樹皮ヨリ水、
「メタノール」又ハ「アルコール」ノ抽出液ヲ其儘又ハ之ヲ濃縮
シ「メタノール」、「アルコール」等ヲ溜去シ得ラル、殘留物ヲ
水ニテ稀釋シ生成スル不溶物ヲ溜去シテ得ラルル殘渣ヲ水ニテ稀
釋シ「クロ、ホルム」、四鹽化炭素又ハ「メチレンクロリッド」等
ト共ニ浸漬シ之ニ可溶性ノ物質ヲ抽出除去シ更ニ「エーテル」、
石油「エーテル」等ヲ用ヒテ處理精製スル公知ノ方法ニヨリテ得
ラルル結晶性物質ハ水ニ殆ンド溶解セズ之ニ微温ヲ與ヘ少量ノア
ルコール」ヲ含有スル水ニテ溶解スレバ一旦消滅ナル溶液ヲ得レ
ドモ長時ノ保存ニ際シテハ漸次結晶性ヲ増大シ結晶又ハ沈澱ヲ析
出シ其ノ強心作用ヲ漸減スルニ至ルヲ以テ所ル物質ヲ注射藥トシ

Figure 5- Additional Nerion Literature

テ使用スレバ適温ナラス本發明者ハ時局下入手困難ニシテ高價ナ
 ル有機溶媒ノ使用ヲ可及的ニ節減シ然モ其ノ目的トスル水ニ可溶
 性ニシテ水溶液トシテ耐久性ヲ有スル夾竹桃ノ有效成分ノ抽出法
 ニツキ種々研究セル結果夾竹桃ノ配糖体中水ニ可溶性ノモノハ醋
 酸鉛液ニヨリ沈澱セザルモ鹽基性醋酸鉛ニヨリ沈澱シ水ニ難溶性
 ノモノハ醋酸鉛ニヨリテハ沈澱スルモ鹽基性醋酸鉛ニヨリテハ沈
 澱セザルコトニ着目シテ本發明ヲ完成セリ即チ夾竹桃葉又ハ樹皮
 ノ水、「メタノール」又ハ「アルコール」ノ抽出液ヲ其ノ儘若ク
 ハ必要ニ應ジテ之ヲ濃縮シ又ハ「メタノール」、「アルコール」
 ヲ溜去シ得ラル、殘留物ヲ水ニテ稀釋シ生成セル不溶解物ヲ濾去
 シタル後濾液ニ醋酸鉛溶液ヲ加ヘテ不純物並ニ水ニ難溶性ノ配糖
 体ヲ鉛抱合物トシテ沈澱セシメテ除澱セシメテ除去シ殘留物ヨリ
 脫鉛スル力又ハ前記ノ濾液ニ鹽基性醋酸鉛液ヲ加ヘテ水ニ易溶性
 配糖体ヲ鉛ノ抱合物トシテ沈澱セシメ之ヲ濾集シ水洗後水、「メ
 タノール」又ハ「アルコール」中ニ懸垂シ鉛ヲ硫化物トシテ沈澱

Figure 6- Additional Nerion Literature

セシメ有效成分ノミヲ溶液中ニ溶解セシメ得ラルル透明ナル濾液ヲ減壓ニテ濃縮スルカ又ハ真空蒸發ヲ行ヒ黃褐色ノ「エキス」又ハ枸橼黃色ノ粉末トシテ夾竹桃ヨリ強利尿作用ヲ有スル配糖体混合物ヲ製造スル方法ナリトス

本發明ノ方法ニヨリ得ラルルモノハ夾竹桃中ニ含有セラルル強心性配糖体及利尿性「フラボン」配糖体等ノ混合物ニシテ水ニ極メテ容易ニ溶解シ水溶液トシテ耐久性ヲ有スルト共ニ極メテ強力ナル強心作用並ニ利尿作用ヲ有スルモノニシテ著シキ苦味ヲ有シ「メタノール」、「アルコール」ニハ易溶、醋酸「エーテル」ニハ若干溶解ス「エーテル」、石油「エーテル」、「クロロホルム」、四鹽化炭素等ニハ殆ンド溶解セサルカ又ハ不溶性ナリ本物質ヲ酸類ト共ニ煮沸シタル後ニ於テハ「フエーリング」液ヲ還元ス本發明ノ方法ニヨリテ得タル「エキス」又ハ粉末ヲ用ヒテ注射藥ヲ製造スルニハ其ノ一定量ヲ生理食鹽水ニ溶解シ力價ヲ貢氏檢定法ニヨリテ定ムルモノトス即チ一CC中ニ六〇〇單位（一單位トハ

Figure 7- Additional Nerion Literature

一瓦ノ蛙ノ心臓ヲ停止セシムル有效成分ノ量ヲ保有スヘク調節セル溶液ハ心臓機能ノ衰弱セル家兎ニ注射スレバ顯著ナル血壓ノ上昇ヲ來シ心搏動ヲ強盛正調ナラシメ何等副作用ヲ認メ得サルト共ニ著シキ尿量ノ増加ヲ認メ得ヘシ
 今本發明ノ實施例ヲ示セバ次ノ如シ

例一

乾燥セル夾竹桃葉又ハ樹皮ノ細碎セルモノ又ハ乾燥セサル生ノモノヲ細切セルモノニ沈降炭酸石灰ヲ混合シテ水ヲ加ヘ湯浴上ニテ溫浸シ得ラルル汚褐色乃至汚綠色ノ浸出液ヲ其儘又ハ必要ニ應ジテ濃縮シ之ニ醋酸鉛溶液ヲ加ヘテ充分ニ攪拌シ不純物並ニ一部配體体ヲ鉛ノ抱合物トシテ沈澱セシメ上澄液ニ更ニ少量醋酸鉛液ヲ加フルモ最早沈澱ノ生成ニ見サルニ至リ之ヲ遠心沈澱又ハ濾過ニヨリ分別シ得ラルル淡黃色溶液ニ稀硫酸、硫酸ソーダ又ハ磷酸ソーダヲ加ヘ若クハ硫化水素ヲ通シテ過剩ノ鉛ヲ硫酸鉛、磷酸鉛又ハ硫化鉛トシテ沈澱セシメ上澄液ヲ取リシ得ラル、證明濾液ヲ

減壓濃縮又ハ真空蒸發シ黃褐色ノ濃厚「エキス」又ハ枸橼黃色ノ無晶形粉末ヲ得ヘシ其ノ得量ハ使用原料ノ〇・五ノ乃至一ノナリ斯クシテ得ラルル濃厚「エキス」又ハ無晶形粉末ハ夾竹桃中強心性配糖体並ニ利尿性「フラボン」配糖体ノ混合物ニシテ水ニ容易ニ溶解シテ微黃色ノ溶液トナル

本溶液ハ耐久性ヲ有シ長期保存スルモ析出物ノ生成ヲ見ルコトナク本物質ノ生理的食鹽水溶液ハ心臟機能ノ衰弱セル家兎ニ注射スルニ顯著ナル血壓ノ上昇ヲ來シ心臓動ヲ強盛正調ナラシメ且何等副作用ヲ認メザルト共ニ著シキ利尿ノ増加ヲ認メ得ベシ又夾竹桃ノ葉又ハ樹皮ヨリ公知ノ如クシテ得タル「メタノール」又ハ「アルコール」ノ抽出物ヲ本發明ノ方法ノ如ク處理シテ得ラルル「エキス」又ハ無晶形粉末モ亦水ニ易溶ニシテ且水溶液トシテ耐久性ヲ有シ強心及利尿ノ作用ヲ有スル配糖体ノ混合物ヲ得ラル

例二

乾燥セル夾竹桃葉又ハ樹皮或ハ生ノ莖ノモノ、細切セル

Figure 9- Additional Nerion Literature

例二

乾燥セル灰竹拂葉又ハ樹皮或ハ生ノ蘆ノモノ、細 又ハ細切セル

モノニ沈降炭酸石灰ヲ混合シ「メタノール」又ハ「アルコール」
 ヲ日ヘ煮沸浸出シ得ラル、深褐色ノ浸出液ヲ蒸發濃縮シタル後之
 ヲ水ニテ稀釋シ生スル不溶性物質ヲ遠心沈澱又ハ濾過ヲ行ヒテ除
 去シ得ラルル透明液ニ鹽基性醋酸鉛液ヲ加ヘ充分ニ攪拌シ水ニ
 可溶性ノ配糖体ヲ鉛ノ抱合物トシテ沈澱セシメ之ヲ母液ヨリ分離
 シヨク水洗シ次ニ之ヲ母液ヨリ分離シヨク水洗シ次ニ之ヲ水「メタ
 ノール」又ハ「アルコール」中ニ懸垂シ稀硫酸、硫酸「ソーダ」
 溶液「ソーダ」ヲ加ヘルカ若クハ硫化水素ヲ通シ鉛ノミヲ不溶性
 ノ硫酸鉛、硫酸鉛又硫化鉛トシテ沈澱セシメ之ヲ分離セル數黃色
 ノ透明溶液ヲ例一ノ如クニ處理シテ黃褐色ノ「エキス」又ハ樹液
 黃色ノ無晶形粉末ヲ得ベシ其ノ得量ハ乾燥原料一匁ヨリ無晶形粉
 末トシテ約一〇瓦ナリ

TRANSLATION OF THE LITERATURE ENCLOSED WITH NERION

NERION

General:

Like digitalis leaf, apocynaceae plants have been studied for their heart strengthening activity. Nerion is a cardiac diuretic, which is made by extracting the glucosides from the leaves of the apocynaceae plants found in Japan. It is physiologically standardized.

Description:

Nerion contains all the active principles of Nerium Odorum leaves, of the apocynaceae family, and the products are assayed according to Kan's method. The strength of the various preparations is as follows:

Nerion powder 1 gm = 2400 units

Nerion liquid 1 cc = 1200 units

Nerion injection 1 cc = 600 units

Nerion powder is a bitter, light yellow, fine powder. The liquid and injection preparations are transparent, yellowish orange liquids. The powder is stable, for long periods, if kept in a cool, dry, dark place.

Action:

1. Nerion is a heart stimulant like digitalis.
2. It increases tone of the blood vessels without increasing the blood pressure.
3. It's action is rapid but it does not show cumulative action as does digitalis.

Experiments With Animals:

1. A 0.1% solution of Nerion liquid is a decided stimulant to the frog's heart.
2. 0.2 cc of the injection, given to a (1 Kg.) rabbit, stimulated the heart and caused a rise in blood pressure.
3. Its effect on mice is the same as digitalis leaf, digitalis purpurea L. but greater than digitalis leaf, digitalis lanata E.

Characteristics:

This preparation compares favorably with strophanthus and digitalis.

1. It is a heart stimulant. By physiological standardization its action is definite and reliable.
2. Its action is limited to the heart.
3. Nerion stimulates the heart quicker and to more marked degree but accumulation of this drug in the system will not be noted.
4. It is more diuretic than digitalis.

5. Though it is more effective than digitalis, it acts without danger to the patient and does not cause pain, induration or destruction of the surrounding tissue when injected.

Indications:

Acute, sub-acute and chronic heart trouble, non-compensating heart, mitralism, endocarditis, pericarditis, arrhythmia, cardiac asthma, edema, nephrosis, dropsy, myocarditis, pregnant kidney trouble, lobar pneumonia, from various causes, and all other diseases which need a diuretic and heart stimulant medicine. It is injected into a vein before an operation, the emaciation of the heart, caused during the operation is prevented.

Directions:

(Powder) 0.5 gm. should be taken two or three times a day for five to seven days. If it is necessary to continue medication after this time the daily quantity must be reduced to 0.5 gm.

(Pellets) Two pellets three to five times per day for five to seven days. After seven days reduce the dose to 2 pellets daily.

(Liquid) One cc., three to five times a day for five to seven days. After seven days reduce the dose to 0.1 cc. daily.

(Injection) One cc. intramuscularly, four or five times a day and at least two or three injections intravenously per day.

Doses for children must be computed by the usual methods. The injections and liquid may be taken simultaneously until effects are noted.

Caution:

The powder must be kept carefully in a cool, dry, and dark place.

Packing:

Nerion powder	25 gm.	100 gm.	250 gm.	500 gm.
Nerion liquid	25 cc.	50 cc.	100 cc.	500 cc.
Nerion injection liquid	1 cc.	5 cc.	10 cc.	50 cc.
Nerion pellets (1 pellet = 0.3 gm.)	50 pellets	100 pellets	500 pellets	

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Canton Store No. 175, Hui-ai-chung-lu, Canton.

Hongkong Store No. 5, Hsue-chakig-chie Chung-chii, Hongkong.

Taihoku Store No. 1, 2-chome Akashi-cho, Taihoku.

Manchuria Yamanouchi Pharmaceutical Joint-Stock Co., Ltd.

Bldg. No. 2, Kobai-cho, Yamato-ku, Hoten.

Shanghai Yamanouchi Pharmaceutical Joint-Stock Co., Ltd.

Bldg. No. 2 263, () Shanghai.

Reference Magazines:

- (1) Page 27, of Nippon Pharmaceutical Magazine, Volume No. 29,
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- (2) Page 127 of Nippon Pharmaceutical Magazine, Volume No. 31,
(Report of Nippon Pharmaceutical Committee) 1941
- (3) Page 131 of Nippon Pharmaceutical Magazine, Volume No. 34,
(Report of Nippon Pharmaceutical Committee) 1942

TRANSLATION OF ADDITIONAL LITERATURE FURNISHED BY MANUFACTURER

Patent No. 172168

NERION

Title of Invention:

Method of manufacturing glucosides possessing a heart stimulating and diuretic action from Nerium Odorum Soland.

Detailed Explanation of Invention:

Heretofore, the following method has been used:

Using water, methanol or alcohol as solvents the active ingredients are extracted from the leaves or bark of Nerium odorum Soland and after concentration the methanol or alcohol is removed by distillation. The remainder is diluted with water and the insoluble residue removed by filtration. The solution is diluted with water and mixed with chloroform, carbon tetrachloride or methylene chloride and the soluble portion is extracted and rejected. The remainder is purified with ether or petroleum ether. It is a crystalline substance practically insoluble in water. When it is slightly heated and dissolved in water containing a small volume of alcohol a transparent solution is produced. When stored for a long period it gradually crystallizes losing its strength, consequently making it unsuitable for injection. This inventor studied the various methods of extracting the active ingredients of Nerium odorum Soland and found that the glucosides soluble in water were precipitated by basic lead acetate but not by a solution of lead acetate and those insoluble in water were precipitated by lead acetate but not by basic lead acetate. Because of this he perfected the following method.

Using water, methanol or alcohol as solvents, extract the ingredients from the leaves or barks of Nerium odorum Soland and if necessary, concentrate or remove the methanol and alcohol by distillation. Dilute the residue with water, remove the insoluble substance by filtration, add a solution of lead acetate to the filtrate and precipitate the impurities and water-soluble glucosides as a lead compound. Remove the precipitate and remove the lead by force from the remaining solution or precipitate the water soluble glucosides by adding a solution of basic lead acetate to the above filtrate. Collect it by filtration and after washing the precipitates with water, precipitate the lead as a sulfide by suspending it in methanol or alcohol and allow the active ingredients to dissolve in the solution. Concentrate the transparent solution under reduced pressure or by vacuum evaporation and obtain the glucosides possessing a heart stimulating and diuretic action as a yellowish brown extract or a citrine-yellow powder.

By this process, a mixture of heart-stimulating glucosides and a diuretic "flavone" glucoside is extracted. It is readily soluble in water and its aqueous solution is stable for a long period and has a powerful heart-stimulating and diuretic action. It is very bitter, readily soluble in methanol and alcohol, partially soluble in ethyl acetate, practically insoluble in ether, petroleum ether, chloroform and carbon tetrachloride. When boiled with acids it reduces Fehling's solution.

To make an injection with the extract or powder, dissolve a fixed quantity in normal saline solution and determine its strength by Kan's standardization method. That is, 1 cc. should contain 600 Units (one unit is the quantity that will stop the heart of a frog weighing 1 gm.). A standardized solution injected into a rabbit with a weak heart causes a marked rise in blood pressure, strengthens and regulates the pulse and markedly increases the volume of urine without causing any secondary reactions.

The following are examples of manufacturing this item:

Example No. 1

Mix precipitated calcium carbonate with pulverized dried or undried leaves or barks of Nerium odorum Soland, add water and infuse over a water bath. Add a solution of lead acetate to the dirty brownish or dirty greenish infusion, concentrate if necessary, agitate thoroughly and precipitate the impurities and a portion of the glucosides as a lead compound. Even if a small amount of lead acetate solution is added to the upper clear portion it will not cause precipitation. To the light yellow solution obtained by centrifuging or filtration add dilute Sulfuric acid, sodium sulfate, sodium phosphate or pass in hydrogen sulfide to precipitate the remaining lead as lead sulfate, lead phosphate or lead sulfide. Concentrate the transparent filtrate under reduced pressure or by vacuum evaporation and obtain a yellowish brown extract or a citrine-yellow non-crystalline powder. The amount of finished product obtainable is from 0.5% - 1.0% of the original material. Both the concentrated extract and the non-crystalline powder are mixtures of heart stimulating glucosides and diuretic "Flavone" glucosides, readily soluble in water and producing a light yellow solution.

The solution is stable for a long period and does not precipitate. Then this product dissolved in normal saline solution is injected into a rabbit with a weak heart, it causes a marked rise in blood pressure, strengthens and regulates the pulse and markedly increases the volume of urine without causing any secondary reactions. Both the concentrated extract and the non-crystalline powder obtained by this process are soluble in water and their aqueous solutions are stable.

Example No. 2

Mix precipitated calcium carbonate with the pulverized dried or undried leaves or barks of Nerium odorum Soland, add methanol or alcohol and infuse by boiling. After concentrating the deep brown infusions by evaporation, dilute it with water and remove the insoluble substances by centrifuging or filtration. Add a solution of basic lead acetate to the filtrate, agitate thoroughly, allow the water soluble glucosides to precipitate as lead compounds and separate from the mother liquor.